

takes place loculicidally, and the three dark-brown seeds, one in each cell, are exposed to view. It is at this stage that the phenomenon in question may be observed. The pressure exerted by the smooth sides of the somewhat oboconical capsule against the equally polished surface of the calyx-tube occasions the rupture of the capsule from the base of the calyx, and its more or less rapid expulsion into the air with its three seeds. The latter, which are at this time free within the cells of the capsule, are carried to greater distances on account of the smaller amount of resistance they offer to the air by reason of their shape and weight; the action, in fact, being not altogether unlike that of the discharge of a cartridge and its contents from a rifle. The suddenness of the explosion depends very much on the state of the atmosphere at the time. On a hot day I have observed several instances of spontaneous discharges, whilst a slight touch only was necessary for the explosion of the remaining capsules whose dehiscence had already commenced. Many of the seeds were observed adhering to the upper leaves and calyx-segments, which are thickly covered with glandular hairs of a remarkably viscid nature. Contact with these moist bodies very soon induces the outgrowth of those curious and beautiful spiral hairs for which the seeds of this and a few other plants are remarkable, and thus they become doubly secured by adhesion. I have noticed in some cases when seeds adhere to the flat surface of a viscid leaf, that this outgrowth assumes a definite outline extending all round the seed in the form of a flat membranous expansion, and these, on removal, recall forcibly the appearance of ordinary winged seeds, like those of *Lepidium marginatum*, for instance. Can this attachment be of any use to the seeds or to the plant itself by feeding on the nitrogenous products of their decomposition? Although I have observed a few of these attached seeds undergoing partial decay, yet, from the nature of their hard horny perisperm, it is not reasonable to suppose that it can take place to any great extent, unless the viscid secretion from the glands is able to render this substance sufficiently soluble for the purpose. If, however, a certain proportion do become sacrificed for the good of the plant, we can understand the object not only of the delicate spiral hairs for ensuring firm attachment, but also that of the explosive process, by means of which a certain number of seeds are conveyed beyond the reach of the viscid surfaces, and falling to the ground, are available for the reproduction of the plant. *Saxifraga tridactylites* might be mentioned as another instance of a viscid plant with the habit of retaining the seeds on its glandular parts; the much larger quantity, however, produced by this latter plant in proportion to what can be required for reproductive purposes would seem to do away with the necessity for any sudden mode of expulsion. Like most plants with sticky glandular hairs, the viscid parts of this *Collomia* may be seen covered with small insects in various stages of decomposition.

It might be asked, "What advantage can it be for an annual plant to feed on its own seeds, the production of which is the completion and, in a certain sense, the object of its existence?" I would suggest, though with diffidence, the possibility of certain annuals being raised by such means to a higher state of existence as biennials or perennials, in which condition they might or might not require the continued assistance of glandular hairs or other such contrivances. This might explain the occurrence of hairs on certain parts of plants either constantly present or at particular times of their life; such, for instance, as those on the first leaves of the turnip plant, and many other examples could be given, in the case of which we might suppose that the possession of such hairs, or whatever they may represent, have ceased to be required.

There does seem to be some sort of general relation as to the degree of hairiness between annuals, biennials, and perennials, and which often becomes apparent during the development of many plants which in their adult condition are destitute of hairs. On this hypothesis it seems to me conceivable that many of our large glabrous-leaved trees may have originated from hairy or glandular annuals, dependent, perhaps, more or less on aerial nitrogenous food. In any case it is interesting to investigate the true purpose—for such there must be—of the elaborate machinery of traps and spring-guns as displayed in the life of this *Collomia*.

J. F. DUTHIE

Royal Agricultural College, Cirencester

P. S. Since the above was written I have observed the effect of placing a few of the empty expanded capsules in water. In a short time (about half an hour) their valves became completely contiguous, and they presented the same appearance as they did

shortly before dehiscence, with the exception of a transparency due to their containing water instead of seeds. This sensitiveness to the action of moisture is clearly a provision for preventing the filamentous outgrowth from the surface of the seeds whilst in the capsule

J. F. D.

Lunar Phenomena

I HAVE pleasure in forwarding a brief account of facts relating to two very remarkable protuberances which were observed on the moon's disc in the Gulf of Siam, by Mr. E. C. Davidson, Telegraphic Engineer, and myself.

H.S.M.'s guard-smit *Coronation* (Champon Bay), July 13 (civil time), in lat. $10^{\circ} 27' 40''$ N. and long. $99^{\circ} 15'$ E., at midnight, the moon bore S.W. by W. magnetic, and its altitude was about 20° , when a prominent projection was seen with the naked eye on the moon's upper limb. The best glasses on board were soon brought to bear upon it, and the enclosed sketches* (with due regard to proportion) were carefully made on the spot.

The protuberance, in colour, was similar to that of the moon. On July 14, at 8 p.m., the moon was observed perfectly clear, but without a vestige left of the protuberance of the previous night. At this hour, however, a small one was noticed in a different position of the limb.

This also had disappeared before the moon rose on the evening of the 15th inst., when it finally presented its usual unbroken appearance.

A. J. LOFTUS

Champon Bay, Gulf of Siam, July 16

The Strength of the Lion and the Tiger

In *NATURE*, vol. xii., p. 474, in a review of Dr. Fayer's book on the tiger, doubts are thrown by the reviewer on the statement that the tiger is stronger than the lion. Dr. Fayer's statement cannot be contradicted by any person well acquainted with both animals. In my book on "Animal Mechanics," published in 1873, I have proved, p. 392, that the strength of the lion in the fore limbs is only 69·0 per cent. of that of the tiger, and that the strength of his hind limbs is only 65·9 per cent. of that of the tiger.

I may add that five men can easily hold down a lion, while it requires nine men to control a tiger. Martial also states that the tigers always killed the lions in the amphitheatre. The lion is, in truth, a pretentious humbug, and owes his reputation to his imposing mane, and he will run away like a whipped cur, under circumstances in which the tiger will boldly attack and kill.

At p. 482 you state that Dr. Bolau, of Hamburg, is about to publish an account of the anatomy of a gorilla which nearly reached Hamburg alive, and was preserved in spirits. Your readers will be glad to learn that he has been anticipated by Prof. Macalister, of Trinity College, Dublin, who has already published a full account of a similar animal, which nearly reached Liverpool alive some years ago, and was dissected by myself and Dr. Macalister. A comparison of his muscles with those of man, chimpanzee, and hamadryas, will be found in my "Animal Mechanics," p. 404 *et seq.*

SAMUEL HAUGHTON

Trinity College, Dublin, Oct. 1

A Snake in Ireland

THE enclosed letter to the editor of the Irish *Daily Express* may excite speculation as to how the snake got where it was found. The fact is worthy of record, at any rate, that a snake has been caught in Ireland. What would St. Patrick say?

"Sir,—My gardener this morning killed a large snake in the garden here, measuring five feet long by three inches in circumference. It has a black back, with light yellow belly; I do not know what species it belongs to, but have preserved it in spirits. Is it not very rare to find such in Ireland?—Your obedient servant,

"FRANCIS WM. GREENE.

"Kilranaghan, Baltinglass, Co. Wicklow, Sept. 11."

I have not seen it, but my correspondent Lady M. has it in her possession, and remarks that its head is very small and its nose pointed; it is quite five feet long, black, and the colour of

* The sketches are not clear enough to be reproduced.

ashes underneath. It appears by a letter from Mr. Greene, "that a gentleman brought two Indian snakes to Ballinrodan, both of which escaped six or seven years ago; one of them was found half eaten by a pig shortly afterwards, and this might be the other, though how it lived through the winters I do not know."

It would be interesting to ascertain whence the snake came and how it found its way to the proscribed island.

London, Sept. 28

J. FAYRER

Origin of the Numerals

In the novel "David Elginbrod," by George Macdonald, p. 45, is a suggestion of the origin of the forms of the numerals in daily use, very similar to that indicated by Mr. Donnisthorpe in last week's NATURE, p. 476. The disposition of the lines in some of the figures is very ingenious. G. W. WEBSTER

Chester, Oct. 4

If your correspondent will refer to Leslie's "Philosophy of Arithmetic," p. 103 *et seq.*, he will find that very much is known respecting the origin of the numerals. By referring to p. 107, same work, he will find that the numerals he gave are wonderfully like the Sanskrit.

Newcastle-upon-Tyne, Oct. 4

WM. LYALL

Scalping

MR. CHARLES C. ABBOTT, in NATURE, vol. xii. p. 369, wishes to learn what other men, if any, besides the North American Indians, have the practice of scalping among them. The question is answered in Southall's "Recent Origin of Man," chap. ii. p. 40. "In this connection we may mention that the custom of scalping is not peculiar to the American Indians. Herodotus mentions that it was one of the most characteristic practices of the ancient Scythians. But this is not all; it is stated that the practice prevails at this day among the wild tribes of the frontier in the north-eastern district of Bengal. The *Friend of India*, commenting on this statement, adds: 'The Naga tribes use the scalping-knife with a ferocity that is only equalled by the American Indians, and the scalps are carefully preserved as evidences of their prowess and vengeance over their enemies. On the death of a chief, all the scalps taken by him during his warlike career are burned with his remains.'"

G. PEYTON

University of Virginia, U.S.A., Sept. 22

OUR ASTRONOMICAL COLUMN

THE DOUBLE STAR Σ 2120.—As mentioned last week, M. Flammarion advocates the binary character of this star, identifying it, as Sir John Herschel had already done, with H. III. 89. Sir W. Herschel's observation runs thus:—

"III. 89. Ad 63^{am} Herculis. In linea per δ et ϵ ducta. 1782 Nov. 26. Double. About 4 degrees from δ towards ϵ Herculis, near the 63rd. Very unequal. L. r.; S. r. Distance 11 $^{\prime\prime}$ 53 $^{\prime\prime}$. Position 47 $^{\circ}$ 48 $^{\prime}$ n. following."

There is a contradiction here; a position "4 degrees from δ towards ϵ Herculis," which pretty well agrees with that of Σ 2120, would not be near 63 Herculis, which is little more than 1 $^{\circ}$ s.p.d.

The formula given in NATURE, vol. xii. p. 147, assigns for the position of the small star at Sir W. Herschel's date—

Angle ... 36 $^{\circ}$ 39' ... Distance 10 $^{\prime\prime}$ 72

The observation has „ ... 42 12 „ „ 11 18

It is by the difference between these positions, which however it may be remarked is not larger than we occasionally meet with on comparing Sir W. Herschel's measures with recent ones, in cases of stars which there is reason to suppose merely optically double, that the binary nature of the object is considered to be proved by M. Flammarion, as it had been by Sir John Herschel in

the paper upon his father's measures, which appears in vol. 35 of the "Memoirs of the Royal Astronomical Society." Until that single observation is supported by curvature in the path of the small star subsequent to its nearest approach to the primary, which if this be really a binary system must probably become sensible within a few years from the present time, the suspicion of rectilinear motion of the small star as the cause of the change of position, representing as it fairly does the measures between 1829 and 1873, is not one perhaps that can be legitimately abandoned. The apparent fixity or nearly so of the principal component to which reference was made in our former remarks, is supported by Dr. Engelmann's comparison of the place deduced from meridian observations at Leipsic in 1867, with Struve's position in "Positiones Medie," for which the mean date is 1836 $^{\circ}$ 1; for secular proper motion he found $\Delta\alpha = +0^{\circ}192$, $\Delta\delta = +2^{\prime\prime}40$ —very insignificant quantities, and showing that if proper motion, as we have surmised, enters into the question, it is mainly the smaller star that is affected by it. M. Flammarion, relying as stated upon Sir W. Herschel's measure of 1782, concludes: "C'est donc un système orbital très-incliné, et c'est peut-être celui dont l'aspect ressemble le plus aux systèmes de perspective." We leave it for the measures that may be made during the next few years to decide between these opinions.

THE NEBULA IN THE PLEIADES.—In No. 5 of "Publicazioni del Reale Osservatorio di Brera in Milano," Herr Tempel has laid down the stars in the Pleiades, from the "Durchmusterung," and traced the outline of the nebula near Merope as it appeared to him with a magnifying power of twenty-four on a telescope of four inches aperture. The outline is shown to be elliptical, one extremity of the longer axis, the northern one, at Merope, and the inclination of this axis to the circle of declination about 18°, so that as referred to Merope, the angle of position of the longer axis is 198°; the greatest and least diameters of the ellipse are roughly 35' and 20'.

M. Wolf, of the Observatory of Paris, observing with the telescope of 0 $^{\prime\prime}$ 31 aperture in March 1874, perceived two nuclei, one almost concentric with Merope, the other and brighter of the two at a distance of about seven seconds, on the same parallel, following. From the month of November 1874 to the end of February 1875 the nebula could not be seen notwithstanding the very favourable atmospheric conditions, and at the same time M. Stéphan was unable to detect it with the telescope of 0 $^{\prime\prime}$ 80. M. Wolf concludes that the nebula is certainly variable, and that its period is pretty short.

Herr Tempel remarks that generally the nebula has been much more readily seen with small telescopes than with large ones, and doubt has been expressed as to any real variability of light; yet it is not easy to understand, except upon this supposition, why the nebula should be visible at certain times in a particular telescope and invisible at others, the circumstances of sky appearing to be about the same in all cases.

This nebula was first remarked by Herr Tempel, at Venice, on the 23rd of October, 1859.

THE SATELLITES OF URANUS AND NEPTUNE.—An elaborate and highly interesting investigation of the elements of these satellites from observations with the 26-inch equatorial of the United States Naval Observatory, Washington, and of the masses of the primaries thereby indicated, has been received from Prof. Newcomb during the past week; it forms an appendix to the Washington Observations for 1873. The most probable value of the mass of Uranus derived from these observations is $\frac{1}{22600}$, with a probable error of 100 in the denominator of the fraction. For Neptune the value of the mass by satellite-observations is $\frac{1}{19380}$; the mass deduced by Prof. Newcomb from the perturbations of Uranus